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10/597,253	07/18/2006	Guofu Zhou	NL040051	8346

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EXAMINER

HICKS, CHARLES V

ART UNIT	PAPER NUMBER
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2629

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/597,253	Applicant(s) ZHOU ET AL.	
	Examiner CHARLES HICKS	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-7 and 9-14 is/are rejected.
- 7) ☒ Claim(s) 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 June 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-7, 9-10, 12-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Zehner (US 7,012,600).

In reference to claim 1, Zehner teaches a display apparatus
(Zehner column 1 lines 23-24), comprising:
an electrophoretic material comprising charged particles in a fluid
(Zehner column 1 lines 30-35),
a plurality of picture elements (Zehner column 2 lines 50-52);
first and second electrodes associated with each picture element
for receiving a potential difference (Zehner column 15 lines 24-40),
said charged particles being able to occupy a position being one of
a plurality of positions between said electrodes (Zehner column 1 lines 30-
35);

and drive means arranged to supply a sequence of picture potential differences in the form of a driving waveform for enabling said charged particles to occupy one of said positions for displaying an image (Zehner column 9 lines 5-8),

the driving waveform consisting of a sequence of image update signals including a picture potential difference (Zehner column 34 lines 40-43),

the image update signals being separated by dwell times (Zehner column 12 lines 24-27; residence time being the dwell time, the time since a particular pixel of the display has changed),

wherein one or more shaking pulses are generated during the dwell times (Zehner Fig. 9-10).

Claim 2 is rejected as being dependent on rejected claim 1 as discussed above and further, Zehner teaches wherein said one or more shaking pulses are generated following each image update signal (Zehner Fig. 8-9, column 26 lines 9-14).

Claim 3 is rejected as being dependent on rejected claim 2 as discussed above and further, Zehner teaches wherein said one or more shaking pulses are generated substantially immediately following each image update signal (Zehner Fig. 8).

Claim 4 is rejected as being dependent on rejected claim 2 as discussed above and further, Zehner teaches wherein each image update signal comprises a reset pulse and a greyscale driving pulse (Zehner column 28 lines 9-17).

Claim 5 is rejected as being dependent on rejected claim 4 as discussed above and further, Zehner teaches wherein each image update signal includes one or more shaking pulses (Zehner Fig. 9-10).

Claim 6 is rejected as being dependent on rejected claim 5 as discussed above and further, Zehner teaches wherein one or more shaking pulses are provided prior to the reset pulse of each image update signal (Zehner Fig. 9, pixels are “shaken” in 304 and then reset to a black or white state at 306).

Claim 7 is rejected as being dependent on rejected claim 6 as discussed above and further, Zehner teaches wherein one or more shaking pulses are provided between the reset pulse and the greyscale driving pulse of each image update signal (Zehner column 28 lines 9-17).

Claim 9 is rejected as being dependent on rejected claim 1 as discussed above and further, Zehner teaches wherein said one or more shaking pulses comprise regular shaking pulses which are generated at predetermined intervals along said driving waveform (Zehner column 26 lines 59-65).

Claim 10 is rejected as being dependent on rejected claim 9 as discussed above and further, Zehner teaches wherein said intervals are substantially equi-distant (Zehner column 28 lines 9-17; predetermined refresh intervals are inherently substantially equi-distant).

Claim 12 is rejected as being dependent on rejected claim 9 as discussed above and further, Zehner teaches a means for temporarily preventing said regular shaking pulses from being generated during an image update sequence, and recommencing generation of said regular shaking pulses after the image update sequence has been completed (Zehner column 14 lines 35-45).

Claim 13 is rejected as being dependent on rejected claim 9 as discussed above and further, Zehner teaches a display apparatus arranged and configured to operate in one of at least two modes, and

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further including means for switching between said two modes (Zehner column 23 lines 52-54).

Claim 14 is rejected as being dependent on rejected claim 13 as discussed above and further, Zehner teaches a display apparatus arranged and configured to operate in one of a first mode, in which generation of said regular shaking pulses is enabled, and a second mode, in which generation of said regular shaking pulses is disabled (Zehner column 14 lines 35-45).

In reference to claim 15, Zehner teaches a method of driving a display apparatus (Zehner column 1 lines 23-24), comprising:

- an electrophoretic material comprising charged particles in a fluid (Zehner column 1 lines 30-35),

- a plurality of picture elements (Zehner column 2 lines 50-52);

- first and second electrodes associated with each picture element for receiving a potential difference (Zehner column 15 lines 24-40),

- said charged particles being able to occupy a position being one of a plurality of positions between said electrodes (Zehner column 1 lines 30-35);

- and drive means arranged to supply a sequence of picture potential differences in the form of a driving waveform for enabling said charged

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particles to occupy one of said positions for displaying an image (Zehner column 9 lines 5-8),

the driving waveform consisting of a sequence of image update signals including a picture potential difference (Zehner column 34 lines 40-43),

the image update signals being separated by dwell times (Zehner column 12 lines 24-27; residence time being the dwell time, the time since a particular pixel of the display has changed),

the method including the steps of generating one or more shaking pulses are generated during the dwell times (Zehner Fig. 9-10).

In reference to claim 16, Zehner teaches a driving apparatus for driving a display apparatus (Zehner column 1 lines 23-24),

the display apparatus comprising: an electrophoretic material comprising charged particles in a fluid (Zehner column 1 lines 30-35);

a plurality of picture elements (Zehner column 2 lines 50-52);

first and second electrodes associated with each picture element for receiving a potential difference (Zehner column 15 lines 24-40),

said charged particles being able to occupy a position being one of a plurality of positions between said electrodes (Zehner column 1 lines 30-35);

and wherein the driving apparatus is arranged to supply a sequence of picture potential differences in the form of a driving waveform for enabling said charged particles to occupy one of said positions for displaying an image (Zehner column 9 lines 5-8),

the driving waveform consisting of a sequence of image update signals including a picture potential difference (Zehner column 34 lines 40-43) ,

the image update signals being separated by dwell times (Zehner column 12 lines 24-27; residence time being the dwell time, the time since a particular pixel of the display has changed),

the driving apparatus further comprising means for generating one or more shaking pulses during the dwell times (Zehner Fig. 9-10).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

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under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zehner (US 7,012,600) in view of applicants admitted prior art (AAPA).

Claim 11 is rejected as being dependent on rejected claim 9 as discussed above and further, Zehner however fails to teach further including charge recycling means within a power supply used to generate said regular shaking pulses.

Applicants admitted prior art teaches further including charge recycling means within a power supply used to generate said regular shaking pulses (AAPA, current specification page 13 lines 15-18; any known charge recycling technique could be applied).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the display of Zehner with the charge recycling of applicants admitted prior art.

The motivation being to reduce power consumption of the display device (AAPA page 13 lines 15-16).

Allowable Subject Matter

6. Claim 8 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art cited fails to disclose wherein a sequence of shaking pulses is generated following each image update signal, the energy of the shaking pulses of each sequence decreasing progressively during said sequence.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Amudson et al. (US 2005/0280626) reads on an apparatus for driving a electro-optic display.

Whitesides et al. (US 2008/0048969) reads on a method for driving electrophoretic displays.

Gates et al. (US 6,704,133) reads on electro-optic display systems.

Daniel et al. (US 2004/0119680) reads on electrophoretic displays.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHARLES HICKS whose telephone number is 571-270-7535. The examiner can normally be reached on Monday-Thursday from 7:30 to 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz, can be reached on 571-272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Sumati Lefkowitz/
Supervisory Patent Examiner, Art Unit 2629